

INDEX OF SURGICAL PROGRESS.

GENERAL SURGERY.

I. Nature, Pathogeny and Treatment of Tetanus. By M. VASELIN (Angers). At the last meeting of the French Congress of Surgery this was one of the four questions proposed for discussion. Of 17 cases observed by VaseLin, but one had recovered; of 22 cases collected in his neighborhood, but one had been cured; and that one had been treated by large doses of laudanum. There may be different species of tetanus, and he believes that there is one which is but a neurosis, curable by the method which he followed in the case of a child who sustained a fracture of the thigh, and a deep wound of the popliteal region by falling into a machine. The knee was disarticulated and the fracture splinted; the patient was doing as well as could be desired when, after a stormy discussion with a visitor, the first symptoms of tetanus appeared; after 29 days the patient recovered, not only from the tetanus, but from the amputation and fracture. In this case the cause of the tetanus could not have been cold nor any modification of the atmosphere; nor any irregularity nor laceration of the wound; there was no systemic poisoning, for the author injected the blood, sweat and the urine of the patient into animals without any effect. He believes that there was simply a nervous hyper-excitation, caused by the discussion which determined the attack of tetanus. Accordingly, he treated the patient for a neurosis, first isolating him, and then administering chloral in large doses with two days after, in spite of the youth of the patient, injections of morphine until the cessation of the spasms. The patient recovered. When his right hand was severely wounded a year after, the tetanus did not reappear. He concludes that tetanus has a nervous origin, curable by laudanum, chloral and morphine. It is not subject to recurrence.

M. BALESTRÌ (Gênes) has thought, since 1882, that he has a remedy

for tetanus; he also considers tetanus a neurosis. All medication based on the infectious nature of the disease has failed. The only successful remedies are those employed in nervous diseases. His remedy is tartrate of antimony. He relates two cases treated successfully by this method, in doses of from 5 to 45 centigrammes, rapid recovery ensuing. He had collected 17 cases occurring in the hospital of Gènes. They had been treated by chloral, with 11 deaths; of 3 cases treated with tartar emetic, 3 recovered.

M. THIRIAR (Brussels) had lost 4 ovariectomy patients from tetanus: (1). The first had a small cyst, removed rapidly and easily. On the sixth day the patient was exposed to a draught and caught cold; trismus appeared in the evening. Chloroform was inhaled, so as to maintain a condition of semi-consciousness, but death supervened 36 hours after the beginning of the trouble. (2). The second was a case of oophorectomy for a hemorrhagic fibroma, the operation lasting 25 minutes. The immediate results were as satisfactory as possible, but six days after the operation, difficulty of deglutition appeared, and on the next, spasm of the extremities with death in the evening. (3). The third was an ovariectomy occupying 20 minutes, including the dressing. Injections of cocaine and morphine produced some relief, but death supervened 18 hours from the beginning of the trouble. (4). The fourth was an ovariectomy occupying 30 minutes, the first symptom appearing on the sixth day. An injection of pilocarpine was given, but death occurred in seven hours. He rejects the nervous theory, every cause of excitement having been excluded in these cases except possibly the cold in the first, and, observing the uniformity of the period of incubation, adopts the theory of contagion. He afterward learned that for two years tetanus had been endemic in the vicinity of the fourth operation. He had collected 8 cases which had occurred in this vicinity during 18 months, where none had been observed for 30 years before. These facts seem to him to singularly favor the parasitic theory of the origin of tetanus.

M. MANOURY (Chartres) did not believe in the contagiousness of tetanus. During 8 years, he had 7 cases, without counting the spontaneous variety or that of the new-born. The first occurred six days

after a compound fracture, death ensuing rapidly. Since that time not a single case of tetanus had developed in the hospital. The second was dead when he saw it. The third developed six days after an ovariotomy, death supervening rapidly. The wound had united, although there were a few drops of blood under the cicatrix. The fourth followed a burn, the patient dying. He lived in a lane where horses never passed. The fifth was a fatal case of tetanus developing after an amputation for crushing of the forearm. The sixth appeared on the ninth day after a herniotomy performed three days after the preceding operation, with death on the next day. This patient lived 12 kilometers from the preceding one, and between the two the operator had performed several important operations without accident. The last case had received a blow on the ear. He died 12 days after. Dogs were inoculated from his cerebellum without results. All these cases occurred in March or April, or in October or November. In none of them had there been any opportunity for contagion. In a large number of cases of tetanus in horses, all were isolated cases, which fact does not seem to him favorable to the theory of contagion of tetanus.

A. VERNEUIL (Paris), after referring to the contradictory theories of the causation of tetanus, compares it to trichinosis, rabies and anthrax, it being derived from animals, and expresses a belief that the horse to which we already owe glanders, gives us also tetanus. At all events, he would advance four theses :

1. Tetanus is a specific infectious malady, the development of which is never spontaneous.
2. Tetanus affects several kinds of animals, but its characters are always identical. If the contagiousness of tetanus be proven for one kind of animal, it will be proven for all and in particular for man.
3. Tetanus is transmitted in several ways, but especially by means of traumatism, like to like, or to different kinds.
4. It probably has a microbic origin. Unfortunately, the microbe itself has not yet been isolated.

The pathogenic germ demands for its development a number of circumstances, formerly considered efficient, but which are but incidental. It needs a combination of circumstances, among which traumatism

and probably cold, take the front rank. If it be admitted that tetanus of the horse is infectious, it must be admitted that tetanus of man is the same. Now, the contagiousness of tetanus in the horse is beyond discussion, as is shown by the cases of Larger presented to the Société de Chirurgie a year ago, and by the observations of Cérémini, who states that at Noisy-le-Sec tetanus has been endemic from time immemorial. All horses wounded within a radius of several leagues from it die of tetanus. It has been estimated that $1\frac{1}{4}\%$ of the horses at Noisy die of tetanus. In a village of Ardennes a veterinarian castrated 13 horses on the same litter, and they all died of tetanus. In a neighboring village he operated upon 10 others, who also died. If tetanus is fatal in the horse, it is the same in man. But it has been said that no man has ever given tetanus to a horse. That proves nothing. We know that when an infectious disease passes from one species to another, it does not necessarily pursue the inverse course. The animal theory of tetanus is based upon four groups of facts:

1. Cases of human tetanus supervening in persons in communication with tetanic horses. Such are the cases of Larger. Such also was the fact in a case of mine where a man died of tetanus after his horse.

2. The particular frequency of tetanus after bites or wounds inflicted by horses.

3. The frequency of tetanus in men who are in habitual relations with horses, such as grooms and stablemen.

4. The appearance of tetanus after wounds which have been in contact with soil contaminated by the dejections of horses.

M. DOVEN (Rheims) had observed 3 cases of tetanus. One appeared after a wound of the hand. At the autopsy red puncta were observed in the gray matter. In the second case there was a myelitis of the femur extending up to the trochanter major. The pus presented micrococci in bunches. The same condition appeared in the blood. In the third case the gray matter presented a rosy tint. Cultures made with fragments of the medulla, the pons, the spleen and the liver were positive. They contained micrococci. Those prepared

with granulations from the wound presented micrococci and bacilli. In connection with the presence of the bacilli, it should be noted that Billroth found albumen in the urine of subjects of tetanus.

He did not consider the experiments of Nicolaier conclusive. On one hand, he had not been able to obtain by culture the pretended microbe of tetanus. On the other, it is not proven that the affection which he determined by inoculation, was tetanus. In guinea pigs and dogs a convulsive affection is often produced, which is not tetanus, but which may be confounded with it. In his investigations he had not been able to find the microbe of Nicolaier, although that author declares it is easy to stain. Most published observations as to the true nature of tetanus are valueless, because of the absence of microscopical investigations by which alone this delicate question can be decided. He has come to wonder if tetanus is really a specific disease, whether it is not simply a form of septicæmia.

M. BORIES (Montauban) reported a case of traumatic tetanus occurring after a contused wound from a horse's foot in a girl of 13. The patient recovered under morphine and chloral. Subjects of tetanus die not of that disease, but of the convulsions which it determines. Accordingly, it is important to watch the patient carefully and to intervene with chloral and morphine in time to prevent the paroxysms.

M. LARGER (Paris), in addition to those reported to the Société de Chirurgie a year ago, had learned of two instances where the contagion occurred after the lapse of several years. The first occurred in two horses, who were attacked in the same stable, ten years apart. In the second, a factory operative, affected with tetanus after a kick, occupied during his illness a chamber which was not washed nor refurnished, nor changed in any way after that occurrence. Afterward, a wounded man was treated in a chamber adjoining it. Only an incomplete partition separated the two chambers, and the two beds stood side by side with only this open partition intervening. The second patient had tetanus. After referring to the failure of experimental proof of the contagion of tetanus, he declares that, in spite of the failure of those proofs, the clinical proofs seem to him incontestable in this respect.

M. BLANC (Bombay) stated that the mortality of the hospital in Bombay had been influenced, especially by two diseases in the past, pyæmia and tetanus. At the present time pyæmia had disappeared, but tetanus continues its ravages in spite of Listerism. The year at Bombay is divided with respect to tetanus, as well as to cholera, into three periods: (*a*), the cold season, from October 15 to March 15; (*b*), the hot season, from March 15 to June 1; (*c*), the rainy season, from June 1 to October 15. Isolated cases of tetanus are found during all these periods, but the disease prevails especially during the hot season, and the hot days occurring between the rains. These are also the periods at which cholera develops. Three forms of tetanus are observed there:

1. Acute or hyperacute tetanus, which lasts on the average three days and presents a temperature of from 108° to 109° Fahr.
2. Subacute tetanus, which entails death between the tenth and twelfth day by respiratory spasm. The temperature is irregular, and may descend below the normal.
3. Chronic tetanus, which lasts from thirty to sixty days, and which is apyretic.

The degree of the contractures has no influence on the prognosis. The acute form is always fatal; the subacute form is almost always but not invariably so; and the chronic form is quite often curable. Up to the present time there are no known lesion of tetanus. Medullary lesions are wanting in acute cases, but may be found in chronic cases of long duration. They are the consequence of the contractures and the result, not the cause of the malady.

He has tried all modes of treatment, but has not yet found a specific. But some methods do harm; such are operations for nerve-stretching. He has perhaps seen more patients die from chloral than from tetanus. Bromide is dangerous, and has given him nothing but failure. It should be remarked, however, that some patients have resisted at the same time tetanus and bromide of potassium. His treatment consists in avoiding treatment. He simply isolates the patient, avoids cold and combats constipation. Hindoo physicians treat tetanus by purgatives, milk-diet and isolation.

He is far from adopting the equine origin of tetanus, but considers it to be something affecting, not the wound, but the patient himself. At Bombay cases of spontaneous tetanus are frequent, and there is no difference between the traumatic and the spontaneous varieties, except that the latter is more often chronic. He believes that the germ of tetanus is transported by water, and that tetanus is imbibed like cholera.—*Revue de Chirurgie*, November, 1886.

II. Fermentation, Putrefaction and Suppuration. By HERMANN KNAPP, M. D. (New York). The writer gives a résumé of the researches of various experimenters, chiefly German, and concludes that fermentation is the decomposition of carbo-hydrates into simpler compounds by the agency of living microbes. Putrefaction is a similar process, the decomposable substance containing nitrogen and sulphur, besides carbon, hydrogen and oxygen. The question of the parallelism of suppuration with the other processes is the chief subject of the author's studies, and he investigates under three heads: (1). Does traumatism of any kind produce suppuration? To answer this question, he made a series of experiments upon rabbits, performing upon the two eyes of the same animal, operations identical in every particular, except that the point of the knife during the second operation was dipped into an emulsion of staphylococcus pyogenes albus. The second day, no irritation in the first, but the hideous picture of a phlegmonous inflammation in the other. In extractions of cataract in rabbits the author has repeatedly bruised and lacerated the iris, evacuated almost all the vitreous, then stirred up the rest with a platinum needle that had previously been brought to a glow, and finally scratched with the same needle the ciliary processes in every direction. Yet, no suppuration ensued, whereas the smoothest and most cautious operations were invariably followed by suppuration when the wound was contaminated in some way by pyogenic fungi. From these experiments, confirmed by many other recorded facts, he concludes that mere traumatism, of whatever kind, never causes suppuration. (2). Do foreign bodies as such cause the formation of pus? A series of experiments in which sterilized foreign bodies were introduced into the

anterior chamber without suppuration while those which had been previously dipped into an emulsion of staphylococcus pyogenes albus, invariably produced suppuration, answers the question in the negative. (3). Are there any kinds of chemical agents that cause suppuration without the intervention of microbes? Briefly reviewing the experiments of Straus, Scheuerlein, Klemperer and Ruys, in introducing into the tissues sterilized solutions of chemical irritants—turpentine and croton oil—from which no suppuration resulted in the cases where the experiments were perfectly performed, from which they concluded that suppuration is always caused by bacteria, the author relates a series of experiments of his own in the same general direction, introducing with great precautions sterilized turpentine in a number of cases, but croton oil in the majority, into the anterior chamber and under the skin, completely confirming the conclusions of the investigators referred to, from which he concludes that suppuration in every case depends on the action of microbes. Pus is “an albuminous, non-coagulable fluid containing multitudes of leukocytes,” and suppuration is “the splitting of living nitrogenous tissue into simpler compounds through the influence of certain bacteria.” In this way the parallelism of the three processes—fermentation, putrefaction and suppuration—is established.—*N. Y. Med. Rec.*, Dec. 25, 1886.

III. Feeding after Surgical Operations. By JAMES B. HUNTER, M. D. (New York). In a brief paper, the author endeavors to emphasize the facts that: (1) personal attention should be given, with precise directions, to the nourishment of patients after all surgical operations, and too much should not be intrusted to nurses who can have no means of knowing the varying requirements of individual cases; (2) vomiting is to be avoided by every means in our power, even if it require absolute rest for the stomach for several days; (3) even appropriate food, where it can be borne, should be given only in very small quantities and at regular intervals; (4) systematic nourishment by the rectum should be resorted to promptly, if other means fail or are insufficient; (5) less food and more water should be given if the patient suffers from fever; (6) the dangers caused by vomiting,

by flatulence or by food difficult of digestion, are much more to be dreaded than those due to abstinence from food; (7) stimulants are of great value where needed to meet special indications, but may generally be discontinued as soon as food can be digested.—*N. Y. Med. Rec.*, Dec. 18, 1886.

NERVOUS AND VASCULAR SYSTEM.

I. Secondary Suture of the Ulnar Nerve with Rapid Return of Sensation. By F. J. SHEPHERD, M. D. (Montreal) In a man, æt. 50, the ulnar nerve had been severed by the blow of an axe between the olecranon process and the internal condyle. Atrophy and loss of sensation and power in the muscles on the ulnar side of the forearm and the little and ring fingers followed. An incision in the line of the nerve and across the scar readily exposed the two ends, the upper being bulbous and the lower atrophied, separated about an inch. The nerve was dissected out, the ends freshened and brought together by a continuous suture of fine catgut, and the wound closed and dressed with dry antiseptic dressing. Fairly good sensation in the ring and little fingers, accompanied with a tingling feeling as if the nerve were asleep, appeared the next day. In 15 days, the wound was firmly united and the patient sent home. Six months later, he reported that he was fast recovering the use of his arm, complaining only of a slight burning pain in the little finger.

T. G. RODDICK, M. D. (Montreal) reported a case of suture of the sciatic 18 months after its division in a man, æt. 26. The operation resulted in gradually returning sensation and motion to the foot and rapid healing of two large and troublesome ulcers on the outer border of the foot. Two years later, he could walk without a cane. The point of interest in the case was the rapid healing of the ulcers after the union of the nerve, showing that the nutritive filaments had first resumed their functions, while sensation and motion were still in abeyance.—*Montreal Medico-Chirurgical Society*, Dec. 3, 1886.

II. Remote Effects of Simultaneous Ligature of the Subclavian and Internal Jugular Veins and the Axillary Artery.